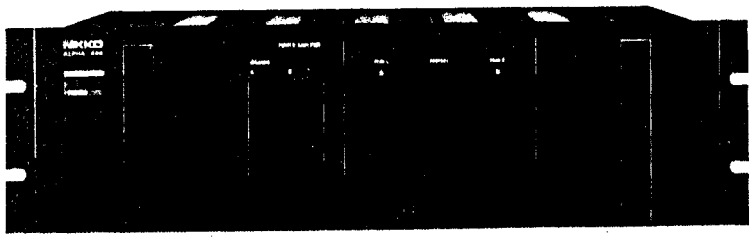
NIKKO POWER AMP

ALPHA 400

STEREO POWER AMPLIFIER



SERVICE MANUAL

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SAFETY INSTRUCTIONS

PRECAUTIONS DURING SERVICING

1. Parts identified by the ⚠ symbol parts are critical for safety. Replace only with same parts number specified.
2. Other parts and assemblies are specified to conform with such regulations as those applying to spurious radiation.
   These must also be replaced only with specified replacements.

   Examples: RF converters, tuner units, RF cables, noise blocking capacitors, noise blocking filters, etc.
3. Use specified internal wiring

   a) Primary leads
   b) Wires covered with PVC tubing
   c) Double insulated wire
4. Use specified insulating materials for hazardous live parts.

   a) Insulation Tape
   b) Insulated Barriers (Spacers)
   c) PVC tubing
   d) Plastic screws for fixing microswitch (Especially in turntable)
   e) Terminal strips
5. When replacing the primary components (transformer, power supply cord switch, by-pass capacitor, etc.), wrap ends of wires securely about the terminals before soldering.

   Where hand soldering is involved, a minimum spacing below between terminals of uninsulated live parts of primary or supply circuitry through air or over surface is to be maintained.

   120V appliance : 3mm spacing min.
   220V and 240V appliance : 6mm spacing min.
6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal resistance, rectifiers, etc.)
7. Check that replaced wires do not contact sharp edges or pointed parts.
8. Do not leave electric conductive parts (screws, droplets, etc.) inside the appliance.

SAFETY RECHECK AFTER SERVICING

Confirm the specified insulation resistance between power plug prongs and externally exposed parts of the appliance is greater than 10Mohms, however, for equipment with external antenna terminals (tuner, receiver, etc.) specified insulation resistance should be more than 2.2Mohms (ground terminals, in-output jacks etc.).

SPECIFICATIONS

Rated Power Output ..... 120 W + 120 W
Min. RMS power per channel into 8 ohms from 20 Hz ~ 20 kHz at 0.01% T.H.D., both channels driven.
Both Channels Driven at 4 ohms, 1 kHz, (DIN)
..... 135 W + 135 W
Total Harmonic Distortion ..... 0.002 %
Both Channels Drive of Related Power 8 ohms, 1 kHz
Dynamic Power Output
8 ohms ..... 150 W
6 ohms ..... 160 W
4 ohms ..... 170 W

Dynamic Headroom ..... 1.0 dB
Power Bandwidth (T.H.D. 0.09%) ..... 5 Hz to 80 kHz
Damping Factor (8 ohms) 50
Input Sensitivity/Impedance ..... 1000 mV/50 kohms
Signal to Noise Ratio ..... 115 dB
Frequency Response (5 Hz to 100 kHz) .... + 0dB, −1dB

- **General**

Power Requirement ..... AC120 V, 60 Hz
Power Consumption ..... 320 W, 420 VA
Dimensions ..... 482 (W) x 141 (H) x 359 (D) mm
(19" x 5-1/2" x 13-1/10")
Weight without package ..... 13 kg (28.7 lbs)

BLOCK DIAGRAM

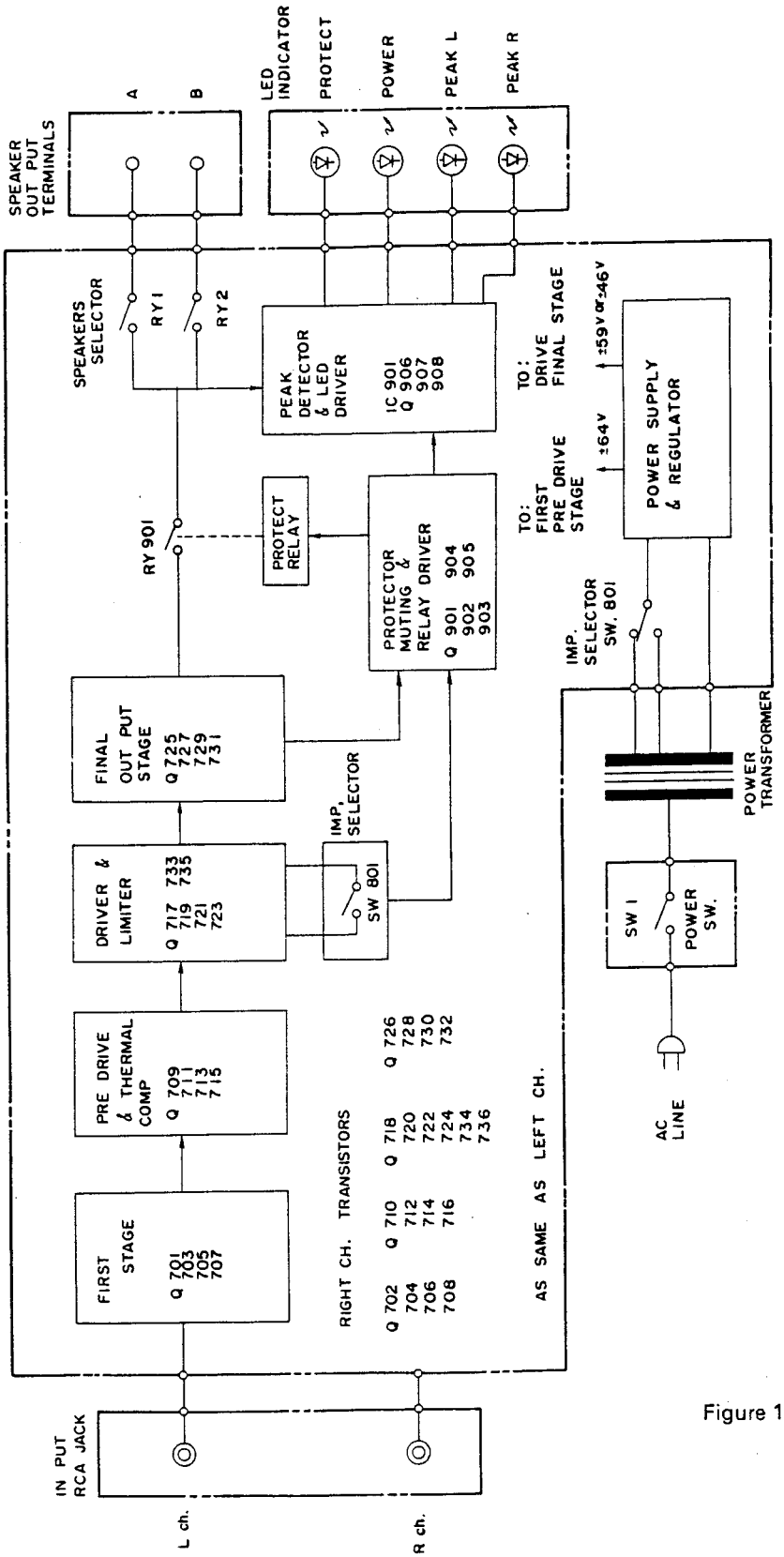


Figure 1

ALIGNMENT

ALIGNMENT PRECAUTIONS

1. As the ALPHA 400 is a power amplifier with large output power, it consumes much electrical power and a great amount of current flows in the power source line of the primary side. Therefore, in the case when it is connected to the source by an extension cord, the size of the extension cord should be equal or larger than that of the power source cord of the ALPHA 400. Otherwise, the voltage might be reduced or the extension cord might generate excessive heat because of the resistance which the cord has, then not only can proper alignment be done, but also it is very dangerous.
2. If the power sources are supplied to the ALPHA 400 and the instruments by branching off from one cord, the voltage is sometimes dropped down and the stability of the instruments goes down.
   The ALPHA 400 and the instruments should be connected to the power sources by using independent cords. The ALPHA 400 must take the power source from AC outlet of the wall side.
3. As there are many parts which hold high voltage in the circuit and the parts inside of the ALPHA 400 be careful not to receive an electric shock. In the case of connecting and taking off the instruments, you must turn off the power switch of the ALPHE 400 before getting on the work.
4. When the circuit happens to be shorted by the drivers or test probes used for alignment through mistake, the circuit and the parts will be damaged. As the damage is larger than that of ordinary amplifiers and receivers, close attention is needed. It is advised that the turning driver, excluding the top part, should be wrapped with insulation tape or a driver made of plastic or some kind of insulating material should be used.
5. As the dummy load resistor generates heat while alignment, it gets very hot and you may be burnt if you touch it with bare hands. It is better if you can put the dummy load resistor in a place away from being touched, but the wire between the dummy load resistor and the amplifier should not be long. Contrive some method, like putting the dummy load resistor in a well ventilated box. Further, as more than 5 A current might folw in the wire connecting the dummy load resistor and the amplifier, at least larger than AWG 18 thick wire should be used.

TESTS EQUIPMENT

Allow a minimum of 10 minutes warm-up for test equipment.
Maintain rated line voltage.

Audio Frequency Generator
Distortion Meter
Oscilloscope
AC Voltmeter
DC Voltmeter
2-Dummy Load Resistors, 8 ohms, 250 W

All the semi fixed resistors of the MAIN AMP PCB are set around the center position temporarily. (HVR R733 and HVR R734.)

IDLING CURRENT ADJUSTMENT

1. Connect the 8 ohms dummy load resistors to the left and fight channel speaker terminals.
2. Connect the DC voltmeter across the wiring terminal No. 22 and 23 (left channel) or No. 24 and 25 (right channel). (see Photo 8)
3. Turning on the power switch of the ALPHA 400. Adjist tje semi fixed resistor HVR R733 (lefet channel) or HVR R734 (right channel) so that the DC voltmeter indicates 18.2 mV ± 6.6 mV.
4. Turn off the power switch of the ALPHA 400 and remove the DC voltmeter.

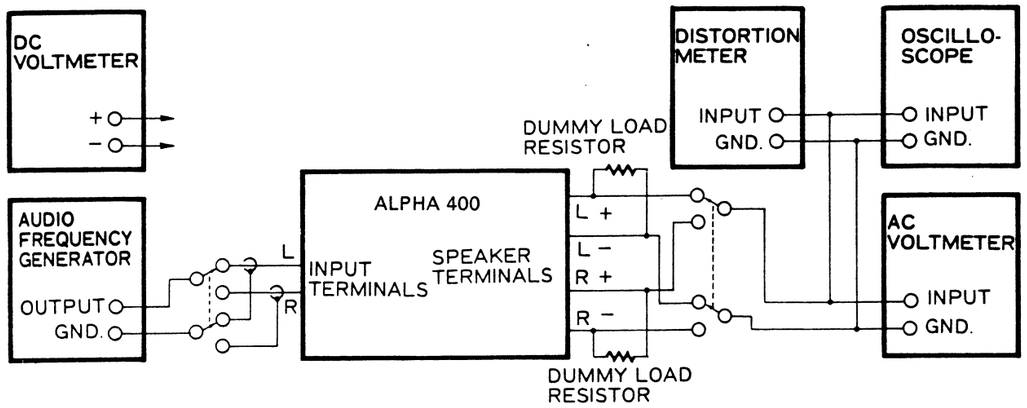


Figure 2 Test Equipment Hook-Up

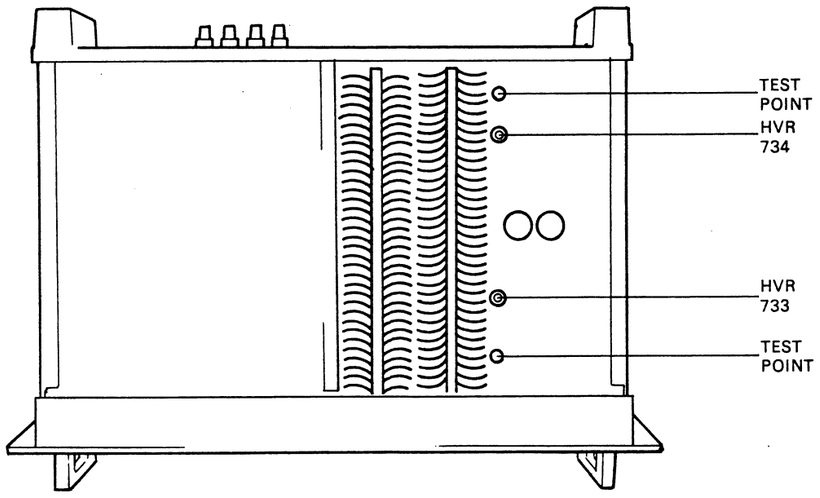


Figure 3 Adjustment Points

POWER TRANSISTORS MOUNTING ASSEMBLY

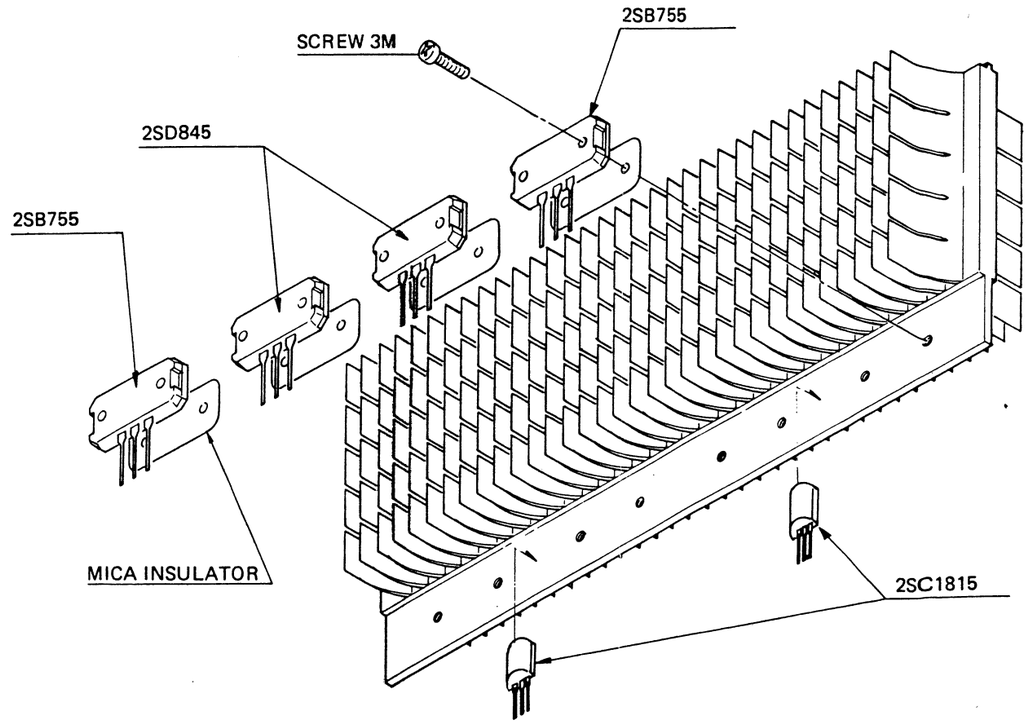


Figure 4

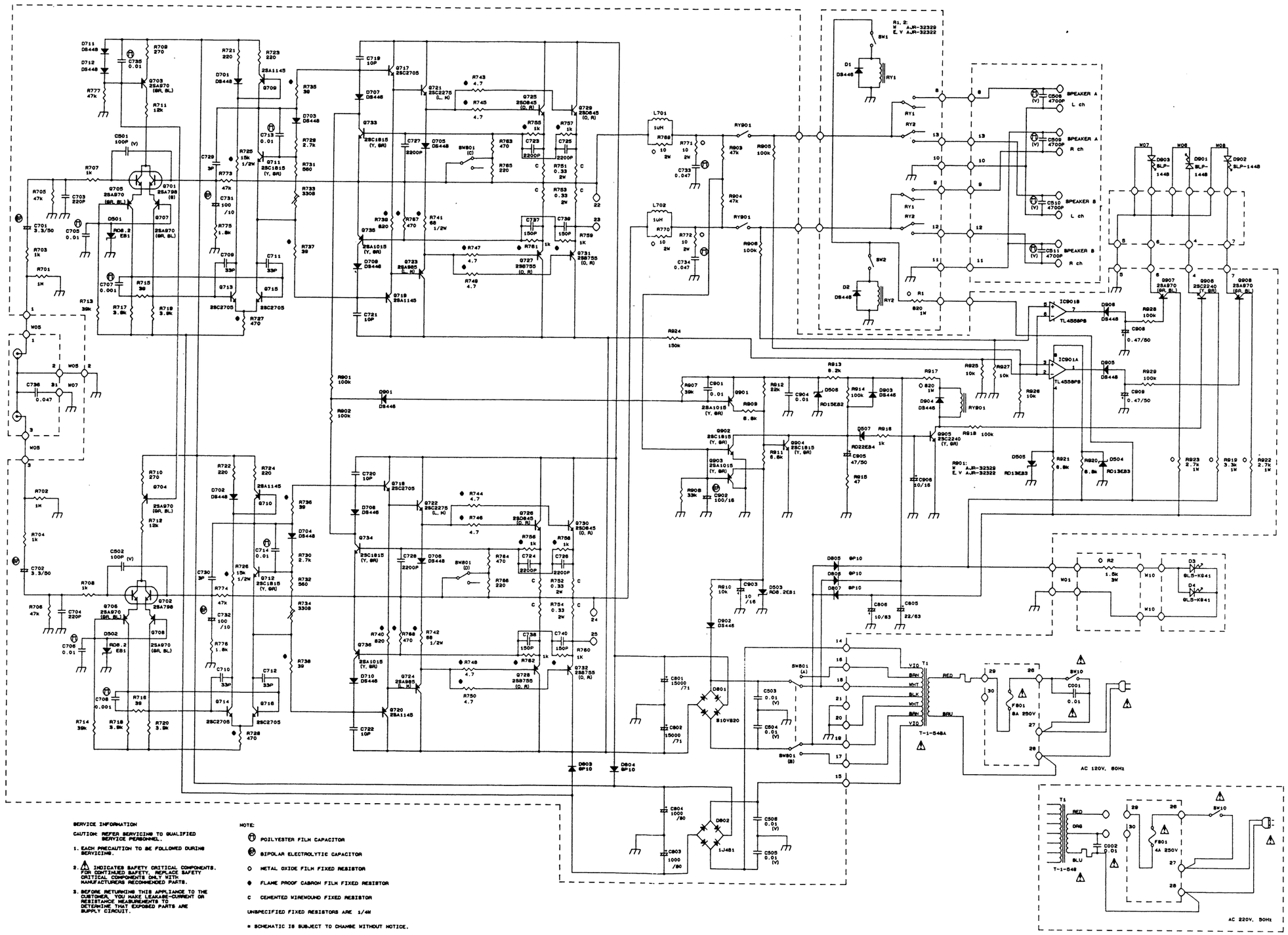
NOTE: For best heat conduction, use thermally conductive silicon grease between the power transistor and the mica insulator and between the insulator and the heat sink.

PRECAUTIONS FOR REPAIR SERVICE

Many of these items are included just as a reminder — they are normal procedures for experienced technicians. Short-cuts and be taken: but, often they cause additional damage to transistors, circuit components or the printed circuit board.

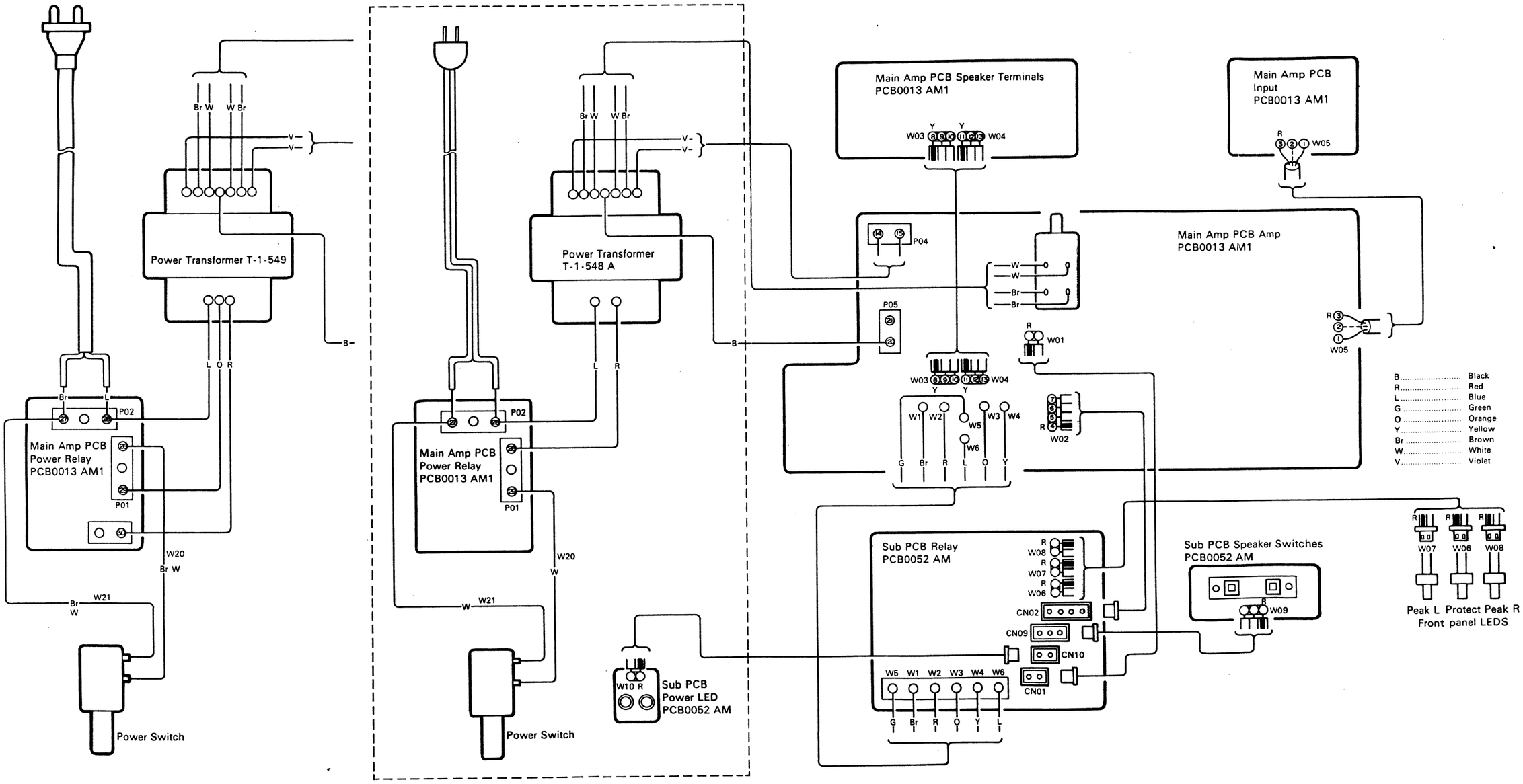
1. **Do not** bridge electrolytic capacitors with AC power. The resultant surges may damage solid state devices.
2. **Do not** bias the base of any transistor while voltage is being applied to its collector.
3. Replacements for output and driver transistors, if necessary, must be made from the same hfe group as the original type. Be sure to include this information when ordering replacement transistors.
4. If one output transistor burns out (open or shorts), always remove **all** output transistors in that channel and check the bias adjustment, the control and other parts in the network with an ohmmeter before inserting a new transistor. All output transistors in one channel will be destroyed if the base biasing circuit is open in the emitter end.

SCHEMATIC DIAGRAM



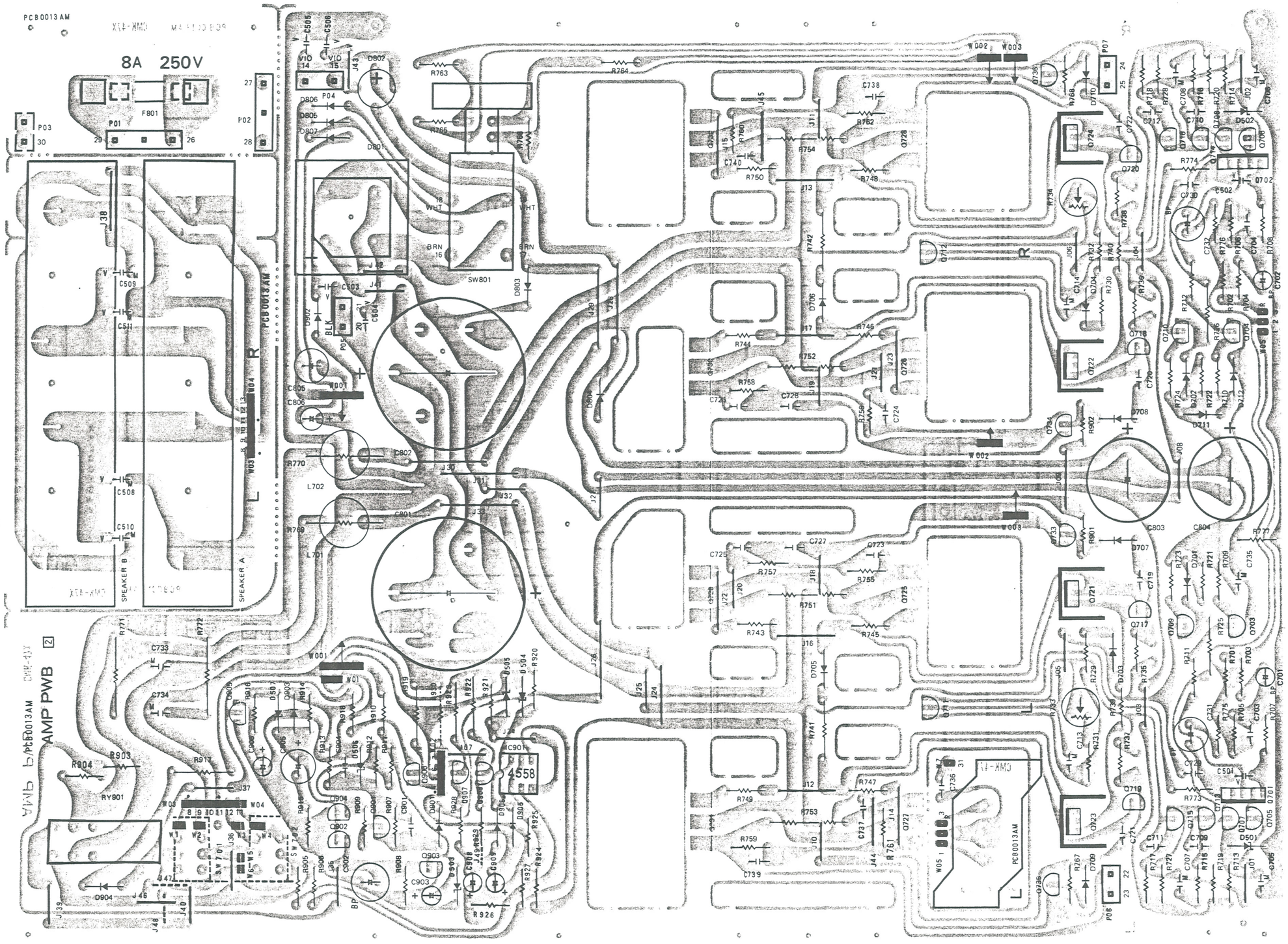
WIRING DIAGRAM

(For E, V) **(For W, C)**

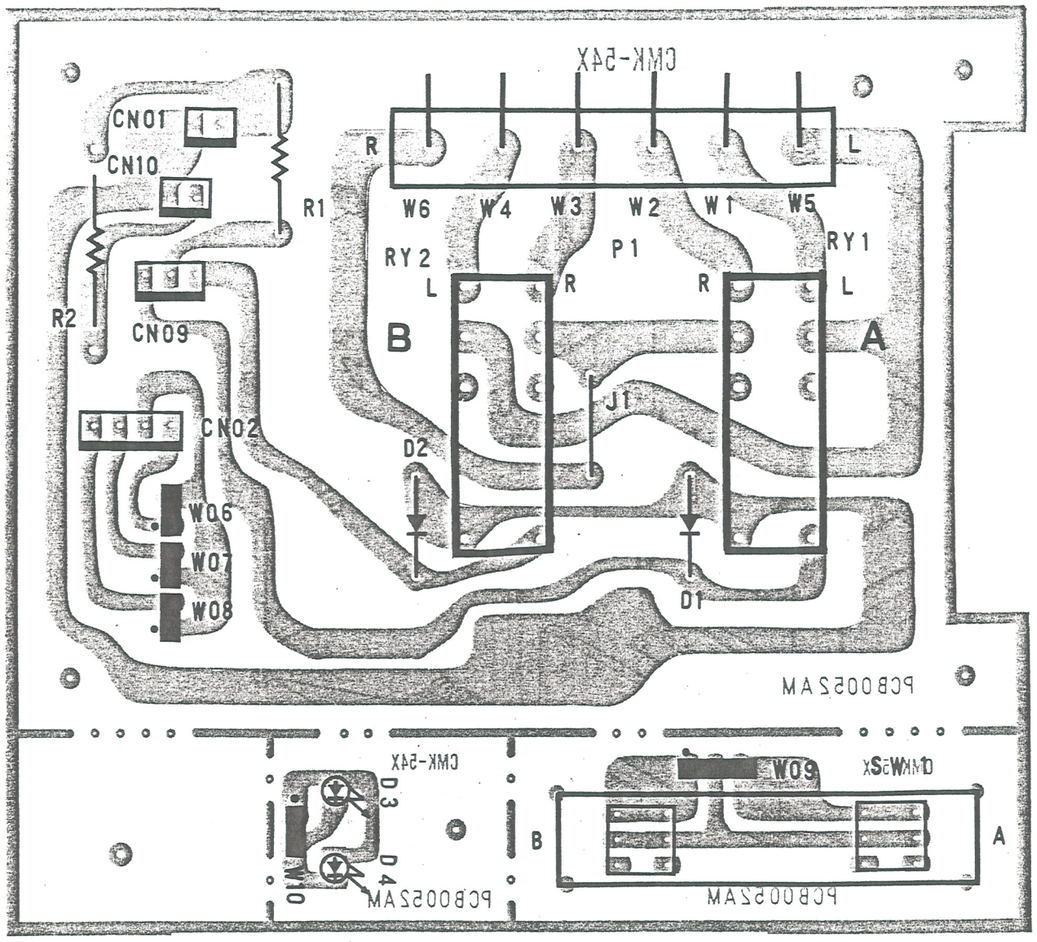


P.C. BOARD

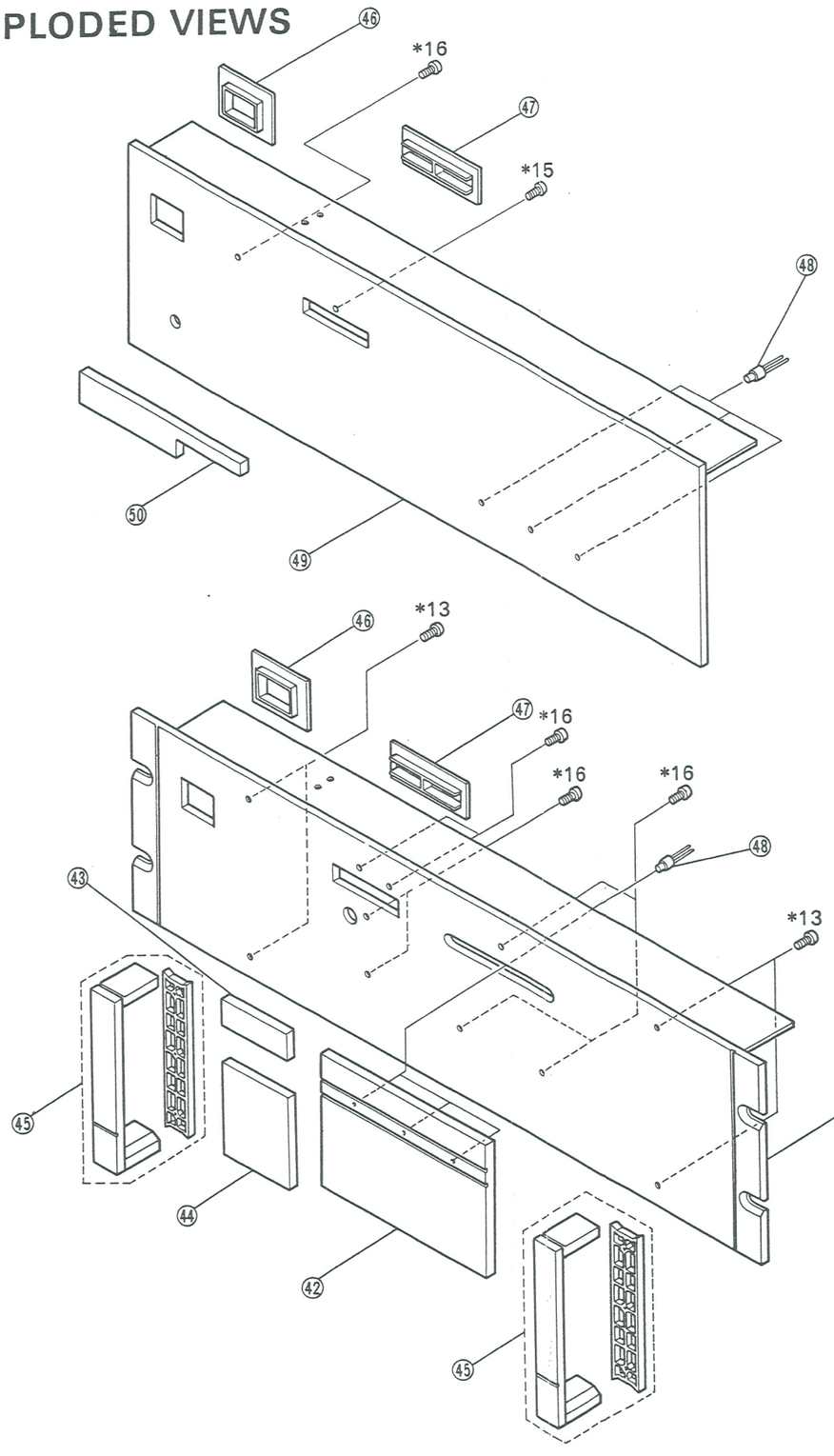
MAIN AMP

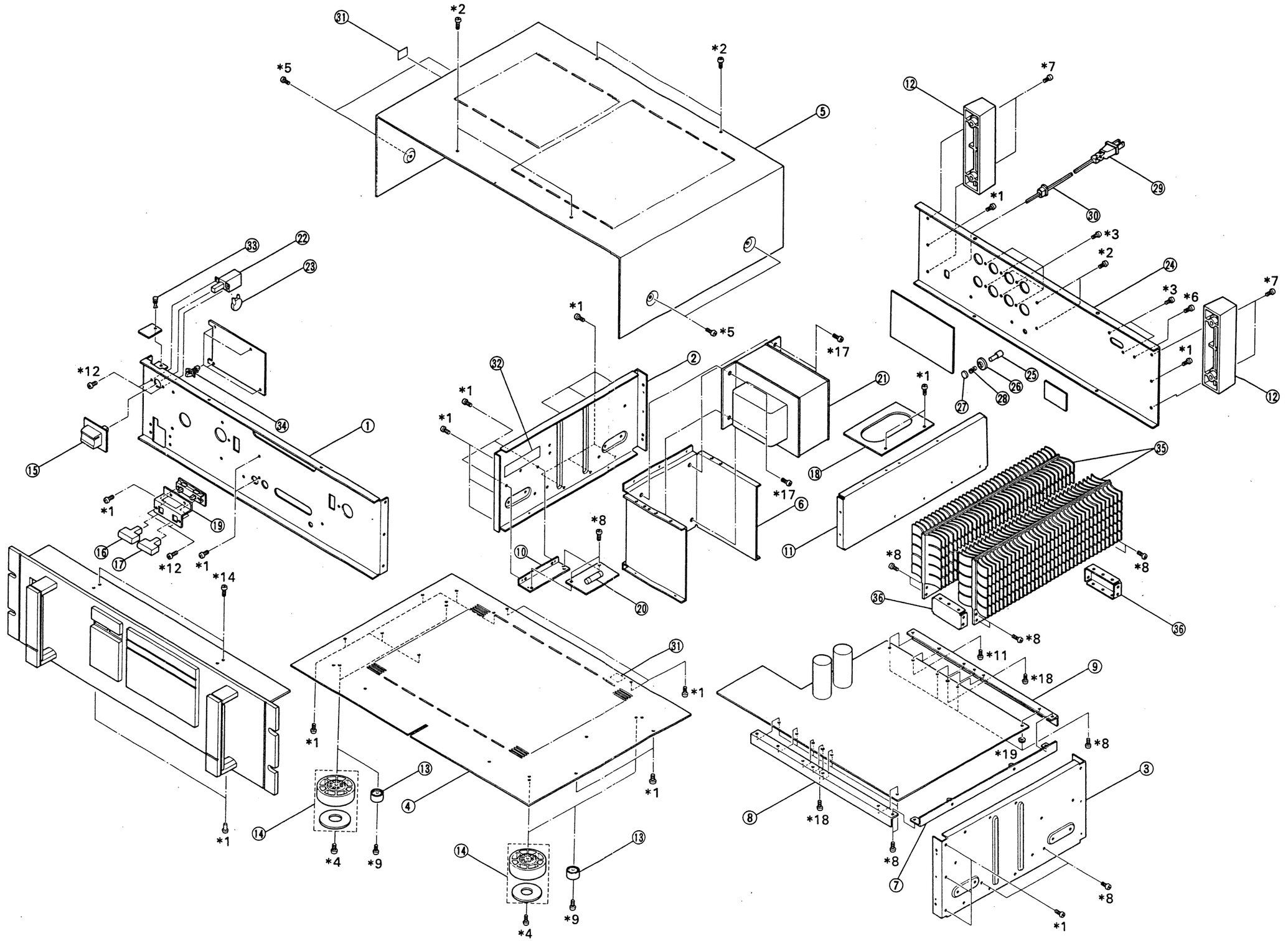


SUB PCB



EXPLODED VIEWS

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PARTS LIST

NOTE:

1. \+ Numberals in file indicate the quantity of parts used in one type.
   W : U.S.A. and Canada model, AC 120V
   V : European model, AC 220V (West German Model)
2. ++ TR: Transistor
   RES: Carbon film fixed resistor
   FP-RES: Flame proof carbon film fixed resistor
   MO-RES: Metal oxide film fixed resistor
   CEM-RES: Cemented wirewound fixed resistor
   POT: Trimmer potentiometer
   VR: Variable resistor
   C-CAP: Ceramic capacitor
   E-CAP: Aluminum electrolytic capacitor
   M-CAP: Polyester film capacitor
   BP-CAP: Bipolar electrolytic capacitor
3. Assemblies and parts are subject to change without notice.
   T-CAP: Tantalum electrolytic capacitor
   BP-CAP: Bipolar electrolytic capacitor
4. Parts ordering procedure:
   A. DO NOT USE THE "REFERENCE" number and "SYMBOL" number. (these are control * for the factory only)
   B. Include in any order
      a. Part number. b. Part description. c. Model number.
      (any of the above lacking from an order may delay shipment of that order.)

WARNING

⚠ INDICATES SAFETY CRITICAL COMPONENTS.
FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

KEY NO.	SYMBOL NO.	TYPE+ W	E	V	DESCRIPTION	PART NO.
	PACKING & ACCESORIES					
		1	1	1	CARTON BOX	PAC10024
		1	1	1	STYROL PAD SET	PAC30049
		1	1	1	POLY SACK C1	PAC40046
		1	1	1	POLY SACK #13	PAC40022
		1	-	-	OWNERS MANUAL	MNL042AM
		-	1	1	OWNERS MANUAL	MNL045AM
		1	-	-	WARRANTY CARD (U.S.A ONLY)	MNL001ZZ
		1	-	-	WARRANTY CARD (CANADA ONLY)	MNL004ZZ
		-	1	1	WARRANTY CARD	MNL013ZZ
		1	-	-	SERVICE STATION LIST (U.S.A ONLY)	MNL012ZZ
		1	1	1	PIN PLUG CORD	COD0031
	CABINET & SSIS ASSENBLY					
1		1	1	1	FRONT PLATE	PRST05060
2		1	1	1	SIDE PLATE (L)-2	PRST06160
3		1	1	1	SIDE PLATE	PRST01700
4		1	1	1	BOTTOM PLATE	PRST05130
5-a		1	-	-	COVER	PRST05110
5-b		-	1	1	COVER	PRST00920
6		1	1	1	P.T HOLDER	PRST01690
7		1	1	1	BRACKET MAIN AMP	PRST01710
8		1	1	1	BRACKET PCB (C)	PRST01780
9		1	1	1	BRACKET PCB (D)	PRST01790
10		1	1	1	BRACKET PCB (G)	PRST01720
11		1	1	1	CENTER ANGLE	PRST01730
12		2	2	2	TERMINAL GUIDE	INJP01770
13		4	-	-	FOOT	ASIP006
14		-	4	4	FOOT ASS'Y	ASIP014
15		1	1	1	POWER BUTTON ASS'Y	INJP00680
16		1	1	1	BUTTON SELECTOR A	INJP03570
17		1	1	1	BUTTON SELECTOR B	INJP04520
18		1	1	1	E-CAP SUPPORT	PRSP00050
19		1	1	1	BRACKET SELECTOR	PRST05040
⚠ 20-a	F801	1	-	-	FUSE 8A 250V	FUS1015
⚠ 20-b	F801	-	1	1	FUSE 4A 250V	FUS1027
⚠ 21-a		1	-	-	TRANSFORMER,T-1-548A (for U.S.A. only)	TRA0039
⚠ 21-b		1	-	-	TRANSFORMER (for CANADA only)	TRA0140
⚠ 21-c		-	1	1	TRANSFORMER,T-1-549	TRA0040
⚠ 22-a	SW10	1	-	-	PUSH SWITCH	SWT1056
⚠ 22-b	SW10	-	1	1	PUSH SWTICH	SWT1135
⚠ 23	C001	1	-	-	C-CAP 0.01 μF 125V	CAPB10305C
24-a		1	-	-	BACK PLATE (W)	PRST00870
24-b		-	1	1	BACK PLATE (E)	PRST00880
25		1	1	1	PUSH BUTTON	INJP01780
26		1	1	1	BUTTON GUIDE	INJP01790
27		1	1	1	BUTTON STOPPER	INJP01800
28		1	1	1	SPRING	SPR1T002
⚠ 29-a		1	-	-	PULG CORD	ACC0028
⚠ 29-b		-	1	1	PULG CORD CEE 2T	ACC0020
⚠ 30		1	1	1	CORD STOPPER SR-4N-4	GRM0010
31		2	-	-	FLASH LABEL (for U.S.A. only)	LBL0055
32		1	-	-	FUSE CA/DA LABEL	LBL0147
33		1	1	1	PUSH RIVET 3*4.5	RIVP004
34		4	4	4	PCB SUPPORT	SPC015
	HEAT SINK ASSEMBLY					
35		2	2	2	HEAT SINK	PRSA00600
36		2	2	2	BRACKET HEAT SINK	PRST01810
	Q725,726	2	2	2	TR 2SD845 (O,R)	TRND845M
	Q727,728	2	2	2	TR 2SB755 (O,R)	TRNB755M
	Q729,730	2	2	2	TR 2SD845 (O,R)	TRND845M
	Q731,732	2	2	2	TR 2SB755 (O,R)	TRNB755M
	FRONT PANEL ASSEMBLY					
41		1	-	-	FRONT PANEL ALPHA400(W)	PRSA01670
42		1	-	-	DECORATION PLATE	PRSA01680
43		1	-	-	KNOB PROTECT (U)1	PRSA01550
44		1	-	-	BLOCK,ALUMINUM B	INJA00430

KEY NO.	SYMBOL NO.	TYPE+ W	E	V	DESCRIPTION	PART NO.
45		1	-	-	HANDOLE ASS'Y	INJP00020
46		1	1	1	BUTTON GUIDE AM1	INJP04590
47		1	1	1	BUTTON GUIDE BM2	INJP04540
48		3	3	3	LED SLP-144B	DIOQ0064
49		-	1	1	FRONT PANEL ALPHA400(E)	PRSA01800
50		-	1	1	KNOB PROTECT (E)	PRSA01780
	MAIN PCB ASSEMBLY					
		1	1	1	MAIN PCB	PCB0013AM
		4	4	4	HEAT SINK	PRSA00480
		1	1	1	HEAT SINK	SNK0001
		2	2	2	SPEAKER TRAMINAL	TAM40019
		1	1	1	2P PIN JACK	SKT0239
		2	-	-	FUSE HOLDER	HOL0012
		-	2	2	FUSE HOLDER	HOLQ026
	IC901	1	1	1	IC TL4558P8	ICT0139
	Q701,702	2	2	2	TR 2SA798 (G)	TRNA798
	Q703~708	6	6	6	TR 2SA970 (GR,BL)	TRNA970
	Q709,710	2	2	2	TR 2SA1145	TRNA1145
	Q711,712	2	2	2	TR 2SC1815 (Y,GR)	TRNC1815
	Q713~718	6	6	6	TR 2SC2705	TRNC2705
	Q719,720	2	2	2	TR 2SA1145	TRNA1145
	Q721,722	2	2	2	TR 2SC2275 (L,M)	TRNC2275
	Q723,724	2	2	2	TR 2SA985 (L,M)	TRNA985
	Q733,734	2	2	2	TR 2SC1815 (Y,GR)	TRNC1815
	Q735,736	2	2	2	TR 2SA1015 (Y,GR)	TRNA1015
	Q901	1	1	1	TR 2SA1015 (Y,GR)	TRNA1015
	Q902	1	1	1	TR 2SC1815 (Y,GR)	TRNC1815
	Q903	1	1	1	TR 2SA1015 (Y,GR)	TRNA1015
	Q904	1	1	1	TR 2SC1815 (Y,GR)	TRNC1815
	Q905,906	2	2	2	TR 2SC2240 (Y,GR)	TRNC2240YG
	Q907,908	2	2	2	TR 2SA970 (GR,BL)	TRNA970
	D501~503	3	3	3	ZD RD8.2EB1	DIOZ0093
	D504,505	2	2	2	ZD RD13EB3	DIOZ0091
	D506	1	1	1	ZD RD15EB2	DIOZ0087
	D507	1	1	1	ZD RD22EB4	DIOZ0094
	D701~706	6	6	6	DI DS448	DIOS0012
	D707~710	4	4	4	DI DS446	DIOS0065
	D711,712	2	2	2	DI DS448	DIOS0012
	D801	1	1	1	DI S10VB20	DIOR0010
	D802	1	1	1	DI 1J4B1	DIOR0030
	D803~808	6	6	6	DI GP10-4002	DIOS0006
	D901~904	4	4	4	DI DS446	DIOS0065
	D905,906	2	2	2	DI DS448	DIOS0012
	L701,702	2	2	2	COIL 0708-1045	CILZ00072
	RY901	1	-	-	RELAY AJR-32329	RLED7012
	RY901	-	1	1	RELAY AJR-32322	RLED7014
	SW801	1	1	1	PUSH SWITCH SDU-4P TV-5	SWT1058
	C002	-	1	1	C-CAP 0.01 μF 125V	CAPB10305C
	C501,502	-	-	2	C-CAP 100 PF 50V	CAPB10103G
	C503~506	-	-	4	C-CAP 0.01 μF 500V	CAPB10311C
	C508~511	-	-	4	M-CAP 4700 PF 250V	CAPE47208J
	C701,702	2	2	2	BP-CAP 3.3 μF 50V	CAPA3R306I
	C703,704	2	2	2	C-CAP 220 PF 50V	CAPB22102G
	C705,706	2	2	2	M-CAP 0.01 μF 50V	CAPC10301D
	C708,709	2	2	2	M-CAP 1000 PF 50V	CAPC10203D
	C709~712	4	4	4	C-CAP 33 PF 500V	CAPB33008C
	C713,714	2	2	2	M-CAP 0.01 μF 50V	CAPC10301D
	C719~722	4	4	4	C-CAP 10 PF 500V	CAPB10004C
	C723~728	6	6	6	C-CAP 2200 PF 50V	CAPB22203G
	C729,730	2	2	2	C-CAP 3 PF 500V	CAPB03002C
	C731,732	2	2	2	BP-CAP 100 μF 10V	CAPA10701I
	C733,734	2	2	2	M-CAP 0.047 μF 250V	CAPE47302J
	C735	1	1	1	M-CAP 0.01 μF 50V	CAPC10301D
	C736	1	1	1	C-CAP 0.047 μF 50V	CAPB47301G
	C737~739	3	3	3	C-CAP 150 PF 50V	CAPB15101G
	C740	1	1	1	C-CAP 150 PF 50V	CAPB15104G
	C801,802	2	2	2	E-CAP 15000 μF 71V	CAPA15902I
	C803,804	2	2	2	E-CAP 1000 μF 80V	CAPA10806I
	C805	1	1	1	E-CAP 22 μF 63V	CAPA22613D
	C806	1	1	1	E-CAP 10 μF 63V	CAPA10623D
	C901	1	1	1	C-CAP 0.01 μF 50V	CAPB10306G

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KEY NO.	SYMBOL NO.	TYPE+ W	E	V	DESCRIPTION	PART NO.
	C902	1	1	1	BP-CAP 100 µF 16V	CAPA1070BI
	C903	1	1	1	E-CAP 10 µF 16V	CAPA10622D
	C904	1	1	1	C-CAP 0.01 µF 50V	CAPB10306G
	C905	1	1	1	E-CAP 47 µF 50V	CAPA47619D
	C906	1	1	1	E-CAP 10 µF 16V	CAPA10622D
	C908,909	2	2	2	E-CAP 0.47 µF 50V	CAPAR4730D
	R701,702	2	2	2	RES 1M OHM 1/4W	RES110501B
	R703,704	2	2	2	RES 1K OHM 1/4W	RES110201B
	R705,706	2	2	2	RES 47K OHM 1/4W	RES147301B
	R707,708	2	2	2	RES 1K OHM 1/4W	RES110201B
	R709,710	2	2	2	RES 270 OHM 1/4W	RES127101B
	R711,712	2	2	2	RES 12K OHM 1/4W	RES112302B
	R713,714	2	2	2	RES 39k OHM 1/4W	RES139301B
	R715	1	1	1	RES 39 OHM 1/4W	RES139001Z
	R716	1	1	1	RES 39 OHM 1/4W	RES139002B
	R717,718	2	2	2	RES 3.9K OHM 1/4W	RES139201B
	R719	1	1	1	RES 3.9K OHM 1/4W	RES139202E
	R720	1	1	1	RES 3.9K OHM 1/4W	RES139201B
	R721~724	4	4	4	RES 220 OHM 1/4W	RES122103B
	R725,726	2	2	2	FP-RES 15K OHM 1/4W	RES015301A
	R727,728	2	2	2	FP-RES 470 OHM 1/4W	RES047101A
	R729,730	2	2	2	RES 2.7K OHM 1/4W	RES127209B
	R731,732	2	2	2	RES 560 OHM 1/4W	RES156103B
	R733,734	2	2	2	POT 330	VRE2331B01
	R735~738	3	3	3	FP-RES 39 OHM 1/4W	RES039001A
	R739,740	2	2	2	FP-RES 820 OHM 1/4W	RES082101A
	R741,742	2	2	2	FP-RES 68 OHM 1/2W	RES068001A
	R743~750	8	8	8	FP-RES 4.7 OHM 1/4W	RES04R703A
	R751~754	4	4	4	CEM-RES 0.33 OHM 2W	RES7R3302P
	R755~762	8	8	8	FP-RES 1K OHM 1/4W	RES010201A
	R763,764	2	2	2	FP-RES 470 OHM 1/4W	RES047101A
	R765,766	2	2	2	FP-RES 220 OHM 1/4W	RES022102A
	R767,768	2	2	2	FP-RES 470 OHM 1/4W	RES047101A
	R769~772	4	4	4	MO-RES 10 OHM 2W	RES410003E

KEY NO.	SYMBOL NO.	TYPE+ W	E	V	DESCRIPTION	PART NO
	R773,774	2	2	2	RES 47K OHM 1/4W	RES147301B
	R775,776	2	2	2	RES 1.8K OHM 1/4W	RES118202B
	R777	1	1	1	RES 47K OHM 1/4W	RES147301B
	R901,902	2	2	2	RES 100K OHM 1/4W	RES110401B
	R903,904	2	2	2	RES 47K OHM 1/4W	RES147301B
	R905,906	2	2	2	RES 100K OHM 1/4W	RES110401B
	R907	1	1	1	RES 39k OHM 1/4W	RES139301B
	R908	1	1	1	RES 33K OHM 1/4W	RES133301B
	R909	1	1	1	RES 6.8K OHM 1/4W	RES168201B
	R910	1	1	1	RES 10K OHM 1/4W	RES110301B
	R911	1	1	1	RES 6.8K OHM 1/4W	RES168201B
	R912	1	1	1	RES 22K OHM 1/4W	RES122301B
	R913	1	1	1	RES 8.2K OHM 1/4W	RES182201B
	R914	1	1	1	RES 100K OHM 1/4W	RES110401B
	R915	1	1	1	RES 47 OHM 1/4W	RES147001B
	R916	1	1	1	RES 1K OHM 1/4W	RES110201B
	R917	1	1	1	MO-RES 820 OHM 1W	RES482101A
	R918	1	1	1	RES 100K OHM 1/4W	RES110401B
	R919	1	1	1	MO-RES 3.3K OHM 1W	RES433201A
	R920,921	2	2	2	RES 6.8K OHM 1/4W	RES168201B
	R922,923	2	2	2	MO-RES 2.7K OHM 1W	RES427201A
	R924	1	1	1	RES 150K OHM 1/4W	RES115401B
	R925~927	3	3	3	RES 10K OHM 1/4W	RES110301B
	R928,929	2	2	2	RES 100K OHM 1/4W	RES110401B
	SUB PCB ASSEMBLY					
		1	1	1	SUB PCB	PCB0052AM
	D1,2	2	2	2	DI DS446	DIOS0049
	D3,4	2	2	2	LED GL5-KG41	DIOQ0065
	RY1,2	2	-	-	RELAY AJR-32329	RLES7012
	RY1,2	-	2	2	RELAY AJR-32322	RLED7014
	SW1	1	1	1	PUSH SWTICH SPEA21	SWT1114
	R1	1	1	1	MO-RES 820 OHM 1W	RES482101A
	R2	1	1	1	MO-RES 1.5K OHM 3W	RES415205A

SCREWS LIST

REF NO.	DESCRIPTION		PARTS NO.
*1	Binding head screw B	3x6	BIS6K06007
*2	Binding head screw B	3x6	BIS6K06014
*3	Binding head screw B	3x8	BIS6K08005
*4	Binding head screw B	3x12	BIS6K12001
*5	Binding head screw B	4x8	BIS6M08003
*6	Binding head screw S	3x8	BIS6K08018
*7	Binding head screw S	4x16	BIS6M16002
*8	Binding head tapping screw	3x8	BIS6K08001
*9	Binding head tapping screw	3x10	BIS6K10007
*10	Binding head tapping screw	3x10	BIS6K10004
*11	Binding head tapping screw	4x8	BIS6M08011
*12	Binding head machine screw	3x6	BIS6K06005
*13	Binding head machine screw	4x16	BIS6M16004
*14	Countersunk head screw B	3x8	BIS2K08002
*15	Countersunk head machine screw	3x6	BIS2K06001
*16	Countersunk head machine screw	3*10	BIS2K10000
*17	brazier head screw S	4*8	BIS7M08008
*18	pan head tapping screw	3*8	BIS4K08002
*19	toothed lock washer	3	WSH43T6001

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